

What is the difference between weathering and erosion?

Weathering is the process of decomposing, breaking up, or changing the color of rocks. Weathering may be caused by the action of water, air, chemicals, plants, or animals. **Chemical weathering** involves chemical changes in the minerals of the rock, or on the surface of the rock, that make the rock change its shape or color. Carbon dioxide, oxygen, water, and acids may all cause chemical weathering. **Mechanical weathering** is the process of breaking a large rock into smaller pieces without changing the minerals in the rock. Mechanical weathering may be caused by frost, ice, plant roots, running water, or heat from the sun.

Once the small pieces of rocks are changed or broken apart by weathering, they may start to be moved by wind, water, or ice. When the smaller rock pieces (now pebbles, sand or soil) are moved by these natural forces, it is called **erosion**.

So, if a rock is changed or broken but stays where it is, it is called weathering. If the pieces of weathered rock are moved away, it is called erosion.



Erosion caused by rain or irrigation, showing how water can wash away the soil





Soil erosion caused by rain



Shoreline erosion caused by the ocean

Erosion at the edge of a road, caused by rain



Erosion caused by flooding





The Grand Canyon, formed by erosion from water and wind





Erosion by waves, forming a natural bridge



Natural Bridge, Virginia, formed by erosion from river water

Weathering and erosion caused by wind





Erosion in fields caused by wind blowing loose soil





Wind erosion of sand dunes



Dust storm caused by wind erosion of loose soil



Extreme erosion caused by wind over long periods of time

Chemical weathering caused by chemicals in the rocks reacting with the groundwater



Chemical weathering of a statue, caused by acid rain





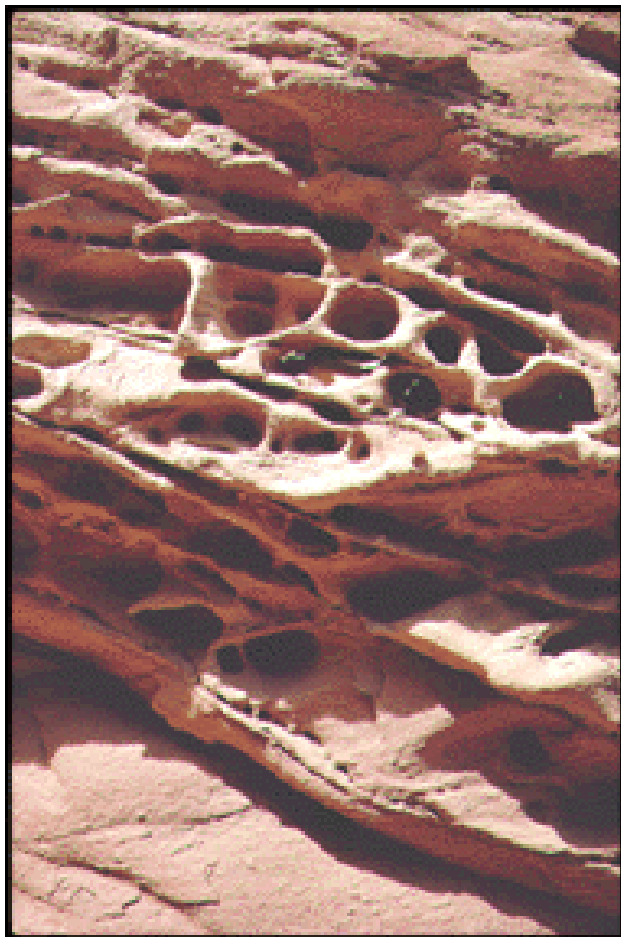
Chemical and mechanical weathering, caused by rain and wind

Mechanical weathering caused by glacial ice



Mechanical weathering by frost and ice, causing the rocks to break apart

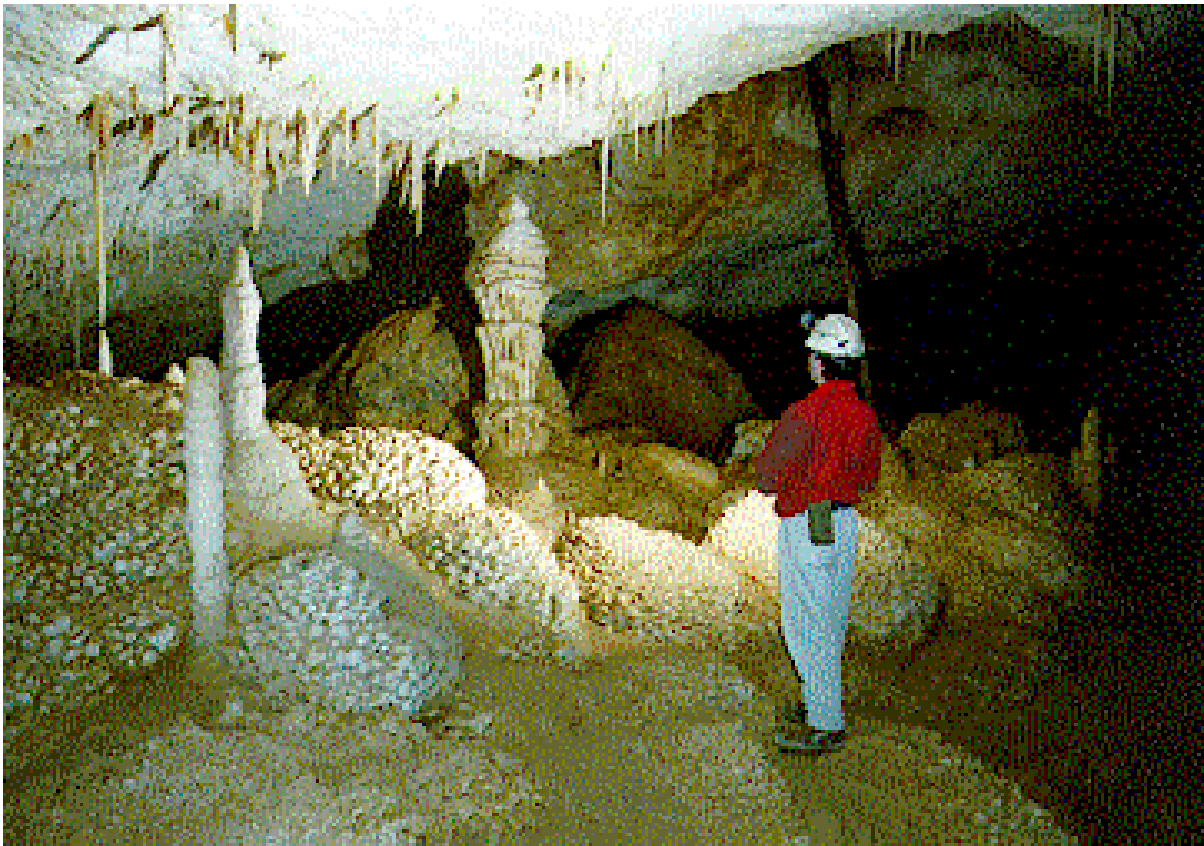




Mechanical weathering



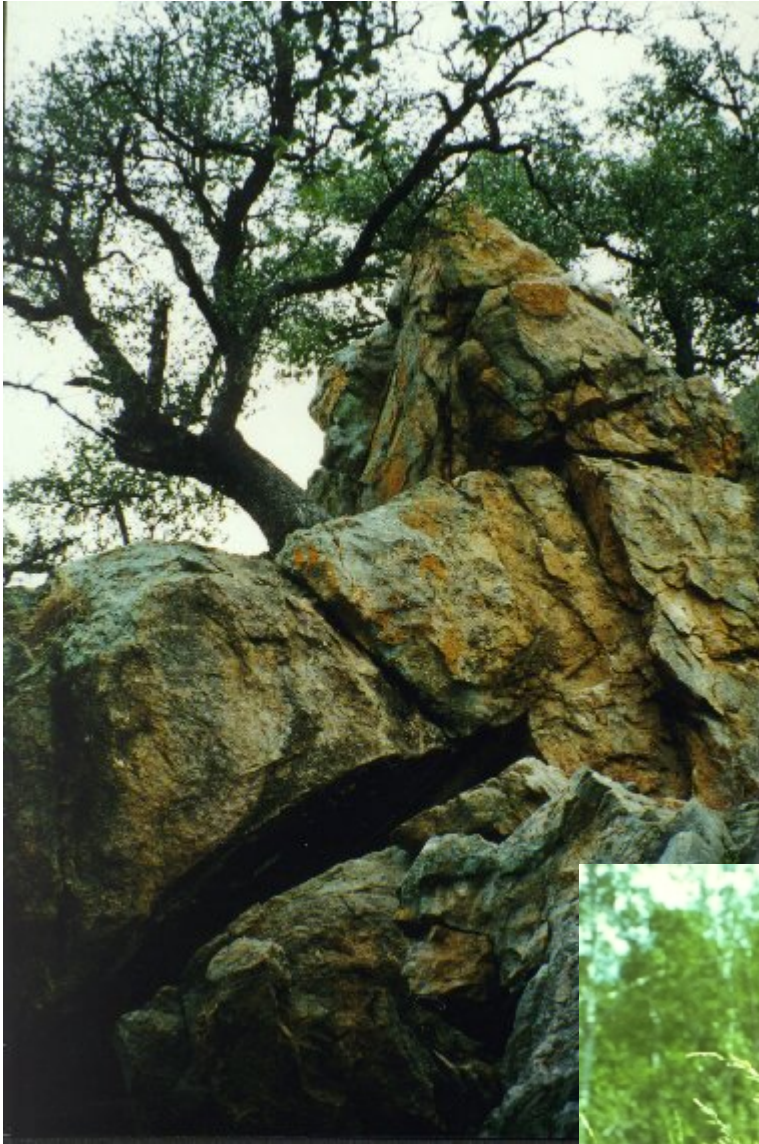
Mechanical weathering called exfoliation,
causing the rocks to break into layers



Chemical weathering causing minerals in the rocks to dissolve, and then form stalactites and stalagmites in a cave

Mechanical weathering showing how rocks can be broken by ice or water





Mechanical weathering
caused by tree roots

Mechanical weathering
caused by plant roots,
lichens, and mosses on
the rock





Mechanical weathering and erosion caused by a landslide



Natural Chimney, West Virginia

What do you think caused this rock formation?

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